

TITLE: SWL10_Bottle_data_README.docx

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ORIGINAL AWARD TITLE: "Benthic carbon cycling and ecosystem structure in the northern Bering and Chukchi Seas" (NOAA/RUSALCA)

DATA ARCHIVE: DBO data archive link: <http://dbo.eol.ucar.edu/>

DATASET OVERVIEW:

This dataset includes measurements of water samples collected at hydrographic stations from the annual Canadian Coast Guard Service Sir Wilfrid Laurier cruise during July 2012. The top row indicates the PI or organization responsible for the data collection. Data includes by column, Cruise, Cast No., DBO Line, DBO station name, Station Number (#), Historical station Name, Date and time (UTC) (yy/mm/dd), UTC time (hh:mm), LAT=Latitude (°N), and LONG=longitude (°W), water depth (m), Cast depth (m), Sample Number, Rosette Bottle #, bottle trip location, raw CTD data (pressure, temperature (°C), Salinity, dissolved oxygen from uncalibrated CTD sensor, Chlorophyll (chl) a filtering volume, extraction volume, ChlT=chlorophyll value, and UMCES nutrient values (Nitrite+Nitrate, Silicate, Phosphate, Ammonia), and Oxygen-18/16 ratios. Additional parameters in the columns from sensors and data descriptors are provided in this file and defined below.

INSTRUMENT DESCRIPTION:

Water samples were collected from rosette bottles attached to a Seabird Model SBE19 CTD for nutrients, chlorophyll and oxygen-18/16 ratios. Water temperature, salinity, and other data that were electronically measured with sensors on the CTD are also provided for the depths where each bottle was closed.

DATA COLLECTION AND PROCESSING

Water column collections included water sampling for inorganic nutrients, dissolved oxygen, oxygen-18/16 ratios of seawater, and chlorophyll a at up to 6 depths at each station from the rosette bottles. Sensor data for temperature and salinity are also included. Subsamples for inorganic nutrients were collected from the CTD rosette, filtered shipboard, and frozen for post cruise analyses. Nutrient samples were processed both at IOS and at the Nutrient Analytical Services Laboratory (NASL) at the Chesapeake Biological Laboratory (CBL); (<http://nasl.cbl.umces.edu/>) at the University of Maryland Center for Environmental Science (UMCES). For CBL, samples were processed for all 4 nutrients: nitrite + nitrate (NO₂+NO₃), silica (SiO₄), phosphate (PO₄), and to a limited extent, ammonium (NH₄). Water samples for ¹⁸O/¹⁶O ratios were collected in small vials, sealed to prevent evaporation and returned for analysis. These samples were analyzed at the University of Maryland Center for Environmental

Science using a Thermo DeltaPlus Stable Isotope Mass Spectrometer coupled to a Gasbench peripheral. Data are reported in the delta notation relative to Vienna Standard Mean Ocean Water (V-SMOW). The water column chlorophyll was analyzed shipboard using a Turner Designs AU-20 fluorometer (non-acidification or Welschmeyer method) following a 24-hour in the dark incubation with 90% acetone at 4°C method (see Cooper et al. 2012, 2013 for further details).

Data File Structure:

File Names (Formats)*: **SWL10 Bottle data.xls**

Files Data Parameters by Column:

Top of each column = responsible lead PI

A	Cruise
B	Cast No.=Cast number
C	DBO Line
D	DBO Station Name or Region=DBO Bounding Box (see EOL DBO site for coordinates)
E	Historical Station Name
F	Cast start time [UTC]
G	LAT N=Latitude in decimal degrees
H	LON E=Longitude in decimal degrees
I	Sample # [All others match to this sample number]
J	Bottle integrity [0=good, 1=leak, 2=bad]
K	Tripping direction (downcast or upcast) [US (up stop), UN (up no stop), USM (up stop mix) or DN (down no stop)]
L	Rosette bottle No. (Number)
M	CTD Scan raw
N	CTD Pressure [dbar] raw
O	CTDTemp-1 [ITS-90 C] raw
P	CTDTemp-2 [ITS-90 C] raw
Q	CTDCond-1 [mS/cm] raw
R	CTDCond-2 [mS/cm] raw
S	CTDSalt-1 [] raw
T	CTDSalt-2 [] raw
U	CTDOxy [volts] upcast raw
V	CTDOxy [mL/L] upcast raw
W	CTDOxy [% Sat] upcast raw
X	CTDFluo [mg/m3] raw
Y	CTDTrans [%] raw
Z	CTDCDOM [mg/m3] raw
AA	CTDAlt [m] raw
AB	Salt Sample No.
AC	Salt-1
AD	Salt-2
AE	Analyst Comment
AF	Salt
AG	Nut (Nutrient) Sample Number (No.)
AH	Frozen sample
AI	NO3-1 [mmol/m3]-IOS
AJ	NO3-2 [mmol/m3]-IOS
AK	Analyst Comment

AL SiO4-1 [mmol/m3]-IOS
 AM SiO4-2 [mmol/m3]-IOS
 AN Analyst Comment
 AO PO4-1 [mmol/m3]
 AP PO4-2 [mmol/m3]
 AQ Analyst Comment
 AR ChITOT-1 [ug/L]-CBL
 AS Analyst Comment
 AT ChITOT [ug/L]
 AU DIC Sample No.
 AV DIC-1 [umol/kg]
 AW DIC-1 [umol/kg]
 AX IOS QF-1
 AY DIC System -2
 AZ DIC-2 [umol/kg]
 BA IOS QF-2
 BB DIC [umol/kg]
 BC IOS QF
 BD Alk Sample No.
 BE Alk-1 System
 BF Alk-1 [umol/kg]
 BG IOS QF-1
 BH Alk-2 System
 BI Alk-2 [umol/kg]
 BJ Alk [umol/kg]
 BK IOS QF
 BL O18-1 [‰ VSMOW]
 BM Sort Reference

Data Version Number and Date: Version 1, 07/30/2015

REFERENCES

Cooper, L.W., M.A. Janout, K.E. Frey, R. Pirtle-Levy, M.L. Guarinello, J.M. Grebmeier, and J.R. Lovvorn. 2012. The relationship between sea ice break-up, water mass variation, chlorophyll biomass, and sedimentation in the northern Bering Sea. *Deep Sea Research Part II* 65, 141-162; doi:10.1016/j.dsr2.2012.02.002.

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